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ABSTRACT

This bibliography reflects a literature survey to ascertain the relevance of mathematical techniques to the determination of teacher salaries. While most of the entries deal with studies on teacher salary determination, few papers cover analysis of the flow and effective utilization of teacher manpower. (Author)

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ANNOTATED BIBLIOGRAPHY ON DETERMINATION OF TEACHERS' SALARIES AND EFFECTIVE UTILIZATION OF TEACHER MANPOWER

George S. Tracz

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No. 11/71 Tracz, G. S. and Burtnyk, W. "New Dimensions for Educational Planning in the Seventies: With Specific Applications to Teacher Manpower." [Forthcoming: September 1971].

ANNOTATED BIBLIOGRAPHY ON DETERMINATION OF TEACHERS' SALARIES AND EFFECTIVE UTILIZATION OF TEACHER MANPOWER

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INTRODUCTION

This brief, annotated bibliography is the outgrowth of a literature survey carried out by the author in preparation for a critical analysis of the relevance of mathematical techniques to the determination of teacher salaries. The project, titled: "A Linear Programming Approach to Teacher Salary Schedules," was funded for the time period of February 1, 1971 to June 30, 1971 by the Office of Research and Development, The Ontario Institute for Studies in Education.

Most of the entries in this bibliography deal with studies on teachers' salary determination, but little attention has been given to studies dealing with sub-elements of salary schedules - for example, merit pay. However, a few interesting papers dealing with the analysis of the "flow" and effective utilization of teacher manpower have been included.

In closing, I would also like to acknowledge the assistance provided by W. Burtnyk in the compilation and preparation of this document.

G. TRACZ
July 1971

ANNOTATED BIBLIOGRAPHY ON DETERMINATION OF TEACHERS' SALARIES AND EFFECTIVE UTILIZATION OF TEACHER MANPOWER

George S. Tracz

PUBLICATIONS IN 1956

[1] Ruml, B., and Tickton, S. G. Teaching Salaries Then and Now. New York: The Fund for the Advancement of Education, 1956. 93 pp.

Abstract

The purpose of this study is to examine and to interpret available statistical information bearing on the changes in the economic status of the teaching profession that have occurred in this country over a period of years and to compare these changes with those in other professions and occupations. In this way, we hope to find evidence of both absolute and relative movements of the economic position of teachers at all levels, from grade school through the university, and of educational administrators as well.

PUBLICATIONS IN 1957

[1] Canadian Teachers' Federation. "Trends in the Economic Status of Teachers." July 1957. 135 pp.

Abstract

The object of this study is to analyze and interpret statistical information on the changes in economic status of teachers that have occurred between 1910 and 1955, and to compare such changes with those in other occupations and with the wealth of the country. Comparisons with other occupations will show the relative movements of the economic position of teachers, and comparisons with national wealth will show absolute movements in the economic status of teachers and of other occupations.

PUBLICATIONS IN 1962

[1] Alberta Teachers' Association. "Merit Pay in Teachers' Salary Administration." Series on Problems in Education, Number 5. August 1962. 67 pp.

Contents

Merit Pay for Teachers - The Claims. Industry Experiments with Merit Pay. Education Experiments with Merit Pay. Albertans Look at Merit Pay. Merit Pay in Teachers' Salary Administration. Syracuse Revisited. The Alternatives. Appendices.

[2] Kershaw, J. A., and McKean, R. N. Teacher Shortages and Salary Schedules. New York: McGraw-Hill, 1962. 203 pp.

Contents

Introduction. Teacher Supply and Demand. Development of Salary Schedules. The Case for Additional Salary Differences. The Markets for Professional Skills. Relative Shortage of Teaching Skills. A Survey of Shortages in the Secondary Schools. The Shortages in Relation to Salaries. Future Costs Under Alternative Policies. Methods of Salary Reform: Overcoming the Practical Difficulties. Further Information About Salary Structure. Variability of Percentages of Teachers Teaching Outside Their Fields, With Schools Sorted by Salary Levels.

PUBLICATIONS IN 1964

[1] Canadian Teachers' Federation. "Teachers' Salaries: Trends and Comparisons." September 1964. 79 pp.

Abstract

The major purpose of this report is to update what are thought to be the more important indicators of the economic status of teachers found in these earlier studies. In addition to this primary aim, it is proposed to present a fuller discussion of teachers' salaries and salary schedules which, it is hoped, will be of interest to the general reader as well as to those with specialized interests in teachers' salaries and whose chief concern will be the statistical data. Finally, an attempt will be made to identify those factors which, it is felt, are most likely to influence trends in teachers' salaries.

PUBLICATIONS IN 1965

[1] Griffiths, Daniel E., Goldman, Samuel, and McFarland, Wayne J. "Teacher Mobility in New York City." Educational Administrative Quarterly, Vol. 1, No. 1, 1965. pp. 15-31.

Abstract

The authors apply social science concepts in the interpretation of interview and written-record data collected in New York City. Particularly illuminating is their development of a typology of teachers and their use of local'sm, formal and informal structures, and bifurcation of interest as categories in the conceptual framework they use for description and analysis.

The main purpose of the study was to describe, for members of the Board of Education, personnel practices in four areas: teacher recruitment, teacher selection, teacher appointment and teacher assignment, and opportunities for promotion.

With this purpose in mind the research team undertook a field study, a type of methodology which is based upon three fundamental notions:

1) The investigator approaches the school system with as few preconceptions as possible and endeavors to describe as precisely as possible what he sees, hears and senses.
2) The investigator refines his conceptual framework throughout the duration of the study.
3) The investigator searches for understanding of the patterns of action which his study has isolated.

[2] Stetfensen, J. P. "Differentiated Teachers' Salaries." Journal of Educational Administration, Volume III, Number 2. October 1965. pp. 108-113.

Abstract

Most United States public school teachers are paid in accordance with a salary policy which recognizes two dimensions--level of educational attainment and years of experience. Attempts to introduce a "merit" dimension have usually been abandoned. Proponents of this system have frequently justified their position on the theme of "improvement of instruction," but it is difficult to accept the claim that there is a unique relationship between the differential and motivation regardless of the amount of the differential. Thorough evaluation and supervision programs are carried out by schools regardless of their salary programs. Yet, considerable interest exists in increasing maximum salary levels on a differential basis, if only to attract to teaching the most capable university graduates. One possible solution is the adoption of additional payments for positions of responsibility, preferably with the teachers' organizations having a voice in the determination of the rank and pay of their colleagues.

PUBLICATIONS IN 1967

[1] Bartholomew, D. J. Stochastic Models for Social Processes. New York: Wiley, 1967. 274 pp. (especially chapters 2, 3, and 7.)

Contents

Ch. 2 Models for Social and Labour Mobility
Ch. 3 Discrete Time Models for Graded Social Systems
Ch. 7 Renewal Theory Models for Graded Social Systems

Ch. 2 discusses the development of a model of a single family line and then expands on this concept for various special cases and approximations.

Ch. 3 discusses discrete time models for graded social systems, a type of open system where transitions into and out of the system are possible. Again, various cases are considered. The two basic models are one for a system with a given input and another for an expanding system with given size.

Ch. 7 discusses the concept of renewal theory for graded social systems. Here, the grade sizes are fixed, and every movement connected with the system is assumed to arise from a loss. The model assumes that the loss rate is either a function of the total length of service or on the seniority within the grade and the promotion is either by seniority or at random.

[2] Board of Education for the Borough of Etobicoke. "Etobicoke Master Plan." Presentation to the Trustees and Officials of the Metro Toronto Area. October 31, 1967. 30 pp.

Abstract

The presentation is divided into two parts, one of which is from the Administrative standpoint and the other from the viewpoint of Board members or Trustees.

The plan was designed to afford promotional opportunities and recognition for Etobicoke teachers. It provides for three promotional positions--Assistant Head, Associate Head, and Master Head.

Teachers, when eligible, may apply and be appointed to one of these positions.

The members of the Etobicoke Board feel that implementation of the Master Plan has resulted in improved teaching, added incentive to remain in the classroom, and maintenance of scholarly initiative and responsibility for academic inspiration.

PUBLICATIONS IN 1968

[1] Rand, M. J., and English, F. "Towards a Differentiated Teaching Staff." Phi Delta Kappan, Vol. XLIX, No. 5, January 1968. pp. 264-268.

Abstract

The single salary schedule and the assumptions of homogeneous teacher roles which support it constitute a school tradition carefully built over the past thirty or forty years. It is time to change this tradition. The Temple City plan approaches the problem by constructing a teacher hierarchy based on differentiated compensation and responsibilities. This paper describes the development and structure of the Temple City Plan.

[2] Charnes, A., Cooper, W. W., Niehaus, R. J. and Sholtz, D. "A Model and a Program for Manpower Management and Planning." Management Sciences Research Report No. 132. Pittsburgh, Pa.: Carnegie-Mellon University, June 1968. 16 pp.

Abstract

A goal programming model is used here to deal with the problem of manpower planning. The development proceeds by a numerical example with graphs and other illustrations. The model includes regional as well as job-position requirements and salary limitations and similar factors developed in a dynamic context which allows for simultaneous consideration of period-by-period budgetary limitations as these are all related to probabilities of attrition and transfer between jobs and regions. Computer programs, data bases and estimating procedures are discussed as part of a comprehensive approach to manpower planning in which the model serves as a device for guidance and coordination.

[3] Benson, C. S. The Economics of Public Education. Boston: Houghton Mifflin Company, 1968. 368 pp. (Refer to Ch. 10, pp. 284-317).

Contents Ch. 10: Professional Salaries and Professional Negotiations

Change in the Average Salary of Teachers. The Single Salary Schedule. Some Problems in Construction of Salary Schedules. Criteria of Salary Schedule Design. The Process of Change in Teachers' Salaries. The Relation Between Salary Minima and Maxima. The Administrative Salary Structure. Problems in the Professional Pay Structure in Public Education. A Career Schedule for Teachers. Nonautomatic Schedule and the Role of Seniority. The Rise of Professional Negotiation. Some Special Problems in Professional Negotiation.

PUBLICATIONS IN 1969

[1] Morton, A. S. "Supply and Demand of Teachers in California." Socio-Economic Planning Sciences. Vol. 2, Nos. 2/3/4/, April 1969. pp. 487-501.

Abstract

A model of input to and output from teaching in California showed the effects of the Teacher Preparatory Institutions (TPI's), the schools, and teachers themselves. The model was based on a reconnaissance, questionnaires addressed to a 5% sample of teachers and their administrators, interviews at the TPI's, and questionnaires on career choice filled out by college students. By collating information from these sources, the author estimated the extent of future shortages at the elementary and secondary levels, and adduced reasons for them. Recommended to the California State Board of Education were a series of actions on the part of various responsible agencies to help relieve the expected teacher shortage.

[2] Bruno, J. E. "Using Linear Programming Salary Evaluation Models in Collective Bargaining Negotiations with Teacher Unions." Socio-Economic Planning Science, Vol. 3, No. 2, August 1969. pp. 103-117.

Abstract

The widespread incidence of teacher strikes, usually associated with demands for higher salaries, has in many school districts throughout the country, established the need to develop effective salary evaluation schemes for school district personnel. Presently used methods of determining salary, such as the fixed step salary schedule, are not capable of considering multiple factors in salary evaluation. The purpose of this paper is to formulate, then apply, a linear programming model to determine a school district salary schedule. The model is capable of incorporating all factors which are considered important by teacher unions, school board, etc., in the salary evaluation. In addition, certain union demands or conditions reached as a result of arbitration can be included in the model. Finally, limits placed upon school district resources available to support the salary structure can be considered.

Essentially, the model can be used by a school district to determine a logical, internally consistent salary schedule which meets specific union demands at minimum school district cost. Finally, the use of the model can give school districts the added flexibility of developing salary schedules which permit overlaps in the established salary hierarchies, e.g., it would permit highly qualified teachers to receive higher salaries than low qualified administrators.

[3] Netusil, A. J., and Manatt, R. P. "Influence of School District Characteristics on Salary Change." The Journal of Educational Research, Vol. 63, No. 1, September 1969. pp. 40-45.

Abstract

The problem was an analysis of school district factors--economic, geographic, demographic, psychological, and political--and their employment to determine prediction equations for salary change of school district superintendents, secondary principals, and base salary for beginning, bachelor degree teachers. The statistical techniques of factor analysis, regression, and analysis of variance were utilized. Some major conclusions were that district size, wealth, indebtness, and average past superintendent's pay were the best predictors of superintendent's change in pay. The best predictor of principal's salary change was the factor of district size. To predict change in base salary for beginning, bachelor degree teachers, only the knowledge of the average base salary of the past 6-year period (length of the study) was needed.

[4] Branchflower, N. H. "A Case Study of the Distribution of Faculty Within the College of Engineering at the University of California, Berkeley, for the Period 1960-1968." M.S. Degree Requirement, Report No. 1, December 1969. 21 pp.

Abstract

The movement of faculty within the College of Engineering at the University of California, Berkeley, is analyzed for the nine year period 1960-1968. Movements within the system and between the system and the outside world are assumed to be homogeneous over time. Faculty promotions and departures from various ranks are determined by aggregating yearly totals. These aggregates are then used to estimate the transition matrix of a Markov Chain Model that predicts future faculty distributions based upon present distributions and known appointment policies. Predicted distributions for the years 1966-1968 are compared with actual data.

[5] Organization for Economic Cooperation and Development. Training, Recruitment, and Utilization of Teachers: Statistical Data: Primary and Secondary Education. Paris: OECD, Directorate for Scientific Affairs, 1969.

Abstract

The programmes of the OECD Committee for Scientific and Technical Personnel have given considerable attention to the problems connected with the demand for and supply of teachers as a vital element in the quantitative and qualitative development of the educational system. The quest for an equilibrium between supply and demand calls for the implementation of specific training, recruitment and utilization policies in what is one of the most important sectors of highly qualified manpower.

Questions concerning the demand for and supply of teachers arose in several studies carried out by the OECD particularly in connection with (a) general studies on scientific and technical personnel in OECD countries, (b) general policy and planning in the field of education in Member countries, (c) the recruitment and training of mathematics and science teachers.

In order to take stock of the current and future teacher situation in primary and secondary education, both from a quantitative and qualitative point of view, the Committee requested the Secretariat to prepare a general policy report on this question which would be based on the experience and data put together for a number of OECD countries in the form of individual country case-studies. Six volumes, containing case-studies, have already been published.

In this additional volume, the Secretariat presents short papers including statistical data and a note on the teacher training process for the Member countries which were not the object of a national case-study. These data have been checked and completed by the services concerned in each country. The Norwegian Authorities have added to the statistical data a case-study in the application of teacher demand and supply models for their country.

PUBLICATIONS IN 1970

[1] Charters, W. W., Jr. "Some Factors Affecting Teacher Survival in School Districts." AERA Research Journal, Vol. 7, No. 1, January 1970. pp. 1-27.

Abstract

Proportions of 2,000 Oregon teachers surviving in their respective school districts in five successive years approximated a negative exponential function. The slope of this survival curve was strongly affected by three attributes: sex, age at employment (females only), and school district size (males only). Comparisons of data obtained at different times and places revealed substantial similarities in curve slopes when the three attributes were controlled, except in the case of data covering World War II. A theoretical model of forces affecting teacher survival was proposed.

[2] Gerwin, D. "Teachers' Salary Increases in a Cluster of Suburban School Districts." School of Business Administration, University of Wisconsin, January 1970. 58 pp.

Abstract

One of the most timely problems associated with the allocation of financial resources in public education concerns salary increases for teachers. This study analyzes the problem using a computer simulation model of the decision process in a cluster of suburban districts. The model, which makes salary increase predictions, consists of the policies employed by each district to make a decision. Special emphasis is placed on the manner in which the raises in each one affects all the others.

[3] Pedersen, K. G. "Economic and Social Correlates of Teacher Turnover." Paper presented to the American Educational Research Association, Minneapolis, Minnesota, March 1970. 33 pp.

Abstract

This study was designed to investigate the effects of selected sociological and economic variables on the migration and attrition behaviour of the public classroom teachers in a single state.

This research was motivated by three main purposes: 1) to develop a research design capable of analyzing a large quantity of data related to teacher movement; 2) to assess the implications of selected personal, economic, demographic, and educational school district characteristics for the decision-making behaviour of migratory teachers; 3) and to determine similar school system characteristics on attrition from the teaching profession.

In response to these three purposes, analytical indices capable of providing insights into the variants of teacher migration and attrition behaviour were developed. These measures were then employed to test an extensive quantity of data in order to evaluate the effect of selected correlates on teacher turnover.

[4] Welch, N., and Florian, M. "An Application of Linear Programming to Wage Analysis." Canadian Operational Research Society Journal, Vol. 8, No. 1, March 1970. pp. 28-37.

Abstract

Job evaluation plans, based on the point system, are widely used to determine levels of compensation for hourly paid jobs in industrial organizations. A linear programming model is used to obtain a ranking of all the jobs in the evaluation plan. Wage components are determined for selected work aspects so that a best fit of job ratings based on the evaluation plan to the present hourly wage is obtained. Practical limitations are considered. The results of this study have been implemented in several mills of a pulp and paper company following recent negotiations.

[5] Organization for Economic Cooperation and Development. Technical Report (Restricted). S.O.M.: A Simulation Model of the Educational System. Paris: OECD, Centre for Educational Research and Innovation, March 1970. (CERI/EG/DM/70.01)

Abstract

The simulation model SOM (Simulation Option Model) is meant as a tool for conditional predictions of the development of the educational system. It includes predictions about:

(a) future numbers of students in various parts of the system and outflow from the educational system.

(b) future resource requirements, both physical requirements (such as various categories of teachers and school-building resources) and corresponding monetary requirements.

(c) future supply of teachers for various categories of teachers;

(d) future relationships between teacher supply and teacher requirements.

[6] Hirsch, P. M. "Instructional Responsibility and Teacher Pay." Public Personnel Review, Journal of Public Personnel Association 2, April 1970. pp. 81-85.

Abstract

The writer proposes to focus this discussion on the key factors involved in any effort to revise a teacher salary structure, reviewing and analyzing the existing pay administration concepts in school systems and other areas of public service. This article also offers recommendation for improving the general criteria underlying teacher pay determination.

[7] Krumbein, G. "How to Tell Exactly What Differentiated Staffing Will Cost Your District." American School Board Journal. May 1970. pp. 19-24.

Abstract

This paper deals with the problem of how to project what a switch from a traditional to a differentiated staffing arrangement will cost a school district over a given number of years. It provides for the board and administrator a knowledge and understanding of the financial requirements induced by the transition. The formulas are based on the four positions of the Temple City model, but are flexible enough to accommodate any number of levels that an individual school board might want.

[8] "Differentiated Staffing." Nation's Schools, Vol. 85, No. 6, June 1970. pp. 43-49.

Contents

What is differentiated staffing? Where it started. The Florida project. Teacher reaction. How three administrators view differentiated staffing problems.

[9] Drinkwater, R. W., and Kane, O. P. "A Model of the Civil Service Class and Pay Structure--A Preliminary Study." Civil Service Department (OR Division). London, 1970. 19 pp.

Abstract

In this paper the authors develop a simplified mathematical model of the Class and Pay structure of the United Kingdom Civil Service. By working from the premise that promotion and wastage rates are invariant with time, the model enables one to examine staff movement within a grade and between grades of the same class; and also to determine promotion prospects, the value to an employee of being in a class and the cost to management of maintaining a particular class structure. An example is given showing the effects of perturbing the steady state structure and hence, to demonstrate how the effects of changes in policy can be explored.

[10] _____. "Rolling Up a Number of Civil Service Classes." Civil Service Department (OR Division). London, 1970. 17 pp.

Abstract

In this paper, the authors show a further development of the previous paper in which they indicated how a mathematical model of the Class and Pay structure of the United Kingdom Civil Service might be constructed. Here they consider the problem of combining a number of separate classes, or pay structures, into a single structure, so that acting within a number of rules for transferring staff, the cost of the new structure is a minimum.

[11] Proulx, P. P. "Academic Techniques--Academic Salaries." Workshop V, Conference of Rectors and Principals of Quebec Universities, 1970. 10 pp.

Abstract

The author describes three academic salary simulation models presently available in Quebec, one prepared by the CRPUQ research staff and the others by the Department of Education. Though quite simple, these models represent attempts to approximate existing salary structures in order to examine the implications of continuing or modifying changes in salary policies in Quebec. One of the Department of Education models is much more an attempt to simulate the actual salary structure than is the Conference of Rectors and Principals' model, which in addition to the constraints imposed by the actual salary structure, reflects policy choices by the Salary Committee of the Conference of Rectors and Principals as to the desirable characteristics of a salary structure.

[12] Rasmusen, H. J. "On Decentralized Planning in a University System." The Institute of Mathematical Statistics and Operations Research, The Technical University of Denmark, August 1970. 29 pp.

Abstract

This paper deals with some of the problems encountered when introducing planning techniques in a university system. Centralized and decentralized planning is considered and it is shown that decentralized planning under central control may lead to an effective management system. The planning problem is then formulated as linear programming problem using the Kornai-Liptak decomposition technique. Numerical data are applied using data collected from the University of Copenhagen as part of a joint research project between the Danish Ministry of Education and the Organization for Economic Cooperation and Development.

[13] Knox, G. M. "Education--Merit Pay for the Best Teachers." Better Homes and Gardens. September 1970. pp. 4-6.

Contents

Merit pay for the best teachers? Who cares about the superb teacher? Why isn't the top teacher rewarded now? Can teachers be rated? Is there another way? Should we pay the price?

[14] Lee, S. M., and Clayton, E. R. "A Goal Programming Model for Academic Planning." Working paper No. 27, Department of Business Administration, Virginia Polytechnic Institute and State University, October 1970. 17 pp.

Abstract

The rapid rate of technological development and the growing complexity of the society in recent years has brought about the renewed awareness of the importance of higher education. The rapid expansion of higher educational institutions, both in size and quality, in turn, requires a systematic approach and dynamic planning for efficient resource allocation on the part of the university administration. This study presents a goal programming model for an optimum allocation of resources in a college of an institution of higher learning.

[15] Thompson, W. R. "Toward a Salary Strategy for Urban Education." Educational Technology, Vo. X, No. 10, October 1970. pp. 49-51.

Abstract

The argument of this brief note is that even if school money were less tight, or even when funds are limited, the civil service salary schedule is just as hobbling to the process of education. As long as the dominant force is toward equalizing salaries between easier and tougher assignments, between beginner and veteran, and between men and women, more school funds will probably permit only limited gains. Differentiated staffing commends itself on many grounds: improved classroom quality through greater specialization in both subject matter and teaching techniques; easier recruiting of top talent with wider salary ranges; and economy of lower pay for semi-skilled and unskilled work through the use of sub-professionals in the classroom.

[16] Lilien, G. "Models for the Selection of Optimal Salary Structure." Unpublished paper. New York: Mobil Oil Corporation, 1970. 22 pp.

Abstract

This paper presents a quantitative approach to determine optimal salary structure. Given a certain hiring plan over a horizon and a desired distribution of employee job-performance, it determines what salary structure should be instituted to best fulfill management's objectives.

[17] Craft, J. A. "Public Employee Budget Negotiations: Budget Search and Bargaining Behaviour." Public Personnel Review, Journal of the Public Personnel Association, 4, October 1970. pp. 244-249.

Abstract

The purpose of this paper is to examine two major behaviour patterns in budget negotiations in California public school districts. There is a careful review and analysis of the interaction process, the tactics and procedures employed by the parties, and a discussion of the distinguishing features of each pattern of negotiating behaviour. This should provide insights into the characteristics of public sector budget negotiations.

[18] Rowe, S. M., Wagner, W. G., and Weathersby, G. B. "A Control Theory Solution to Optimal Faculty Staffing." Office of the Vice President-Planning and Analysis, University of California, Paper P-11, November 1970. 60 pp.

Abstract

This study investigates the resource allocation problem of faculty hiring and promotion patterns using the techniques of optimal control theory. It is both an extension and a synthesis of the conceptual analysis of faculty structure introduced in earlier papers in this series. The specific approach adopted for this investigation assumes that the promotion policies and attrition rates of faculty members are relatively fixed over the short run, and the only variables left open to achieve a desired faculty structure are the institutional hiring policies. Under these conditions, the optimal open loop faculty hiring paths are calculated and their sensitivity is investigated. Finally, this study investigates and evaluates several solution procedures.

[19] Riffel, J. A., and Berertон, J. "TSS2: The Teachers' Salary Simulator Version 2." Unpublished paper. The Alberta Human Resources Research Council, 1970. 23 pp.

Abstract

The teachers' salary simulator (TSS2) documented in this short paper is a useful, very flexible computational tool. Its purpose is to aid negotiators in the development and evaluation of salary schedules by giving them the capability to manipulate rapidly some relevant variables and to study the effects of changes in these variables. It calculates the costs of a number of salary schedules, taking into account year-to-year changes in the qualifications and experience in the teaching force, and then compares these costs.

PUBLICATIONS IN 1971

[1] Bruno, James E. "Compensation of School District Personnel." Management Science, Vol. 17, No. 10, June 1971. pp. 569-587.

Abstract

Recently considerable attention has been focused on the inadequacy of presently used methods of compensating school district personnel. The increasing incidence of teacher strikes in many school districts has established the need for an effective alternative to the inherent rigidity of the commonly used fixed step salary schedule. The purpose of this study is to propose one such alternative that is based upon mathematical programming techniques. In this study a salary evaluation model was derived then applied to a school district. Salary schedules were derived which (1) were consistent with both the imposed hierarchical and budgetary constraints, (2) considered ten factors in the salary evaluation, and (3) reflected established school district priorities and objectives. This latter feature was accomplished by solving the model with various objective functions.

[2] Harman, W. G. "Policy Models for Planning Teacher Manpower." Ph.D. dissertation forthcoming fall 1971. Department of Educational Theory, University of Toronto, and Department of Educational Planning, The Ontario Institute for Studies in Education.

Contents

Introduction. The Teacher Demand Model. The Teacher Allocation Model. The Teacher Retention Model. The Teacher Recruitment Model. The Teacher Training Model. The Total Teacher Model System. Conclusions. Recommendations. Bibliography.